



MASTERmill™ Series CA

With the availability of higher spindle speeds from today's machines, choosing the right end mills becomes increasingly important. Metal Removal's **Series CA** tools can help you achieve the productivity you want from your machines. Conventional tools just don't do the job!

Specifically designed for machining aluminum, **Series CA** tools provide superior performance in slotting, profiling, and ramping operations while running at high SFM and feed rates. Using special substrate material and unique geometries, **Series CA** tools offer greater resistance to chipping compared to conventional carbide tools. This enables the tool and machine to achieve much higher overall metal removal rates.

Ideal for contouring aluminum, copper, and other non-ferrous materials, **Series CA** end mills ensure precision, enhance performance, and boost productivity. All inch size **Series CA** end mills are available in bright or TiCN coatings.

- 2-flute styles for deep pocketing
- 3-flute styles for high-volume metal removal rates and close tolerance slotting
- High rake angle for faster chip flow
- Concentric margins for stability during the machining process
- Reduces chatter at high spindle speeds
- Achieves excellent surface finishes
- Provides extended tool life

Suggested Speeds for Series CA End Mills *(see page 185 for metric recommendations)*

SFM for End Mills Series CA-2, CA-2M, CA-2B, CA-3, CA-3M

Reduce Speeds and CLPT 20 % for Slotting Operations

Surface Feet per Minute (SFM)

Material	Preferred Coating	Alternate Coating	Hardness		Speed Range	Uncoated	TiN Coated	TiCN Coated
			Brinell	HRC				
Low-Silicon Aluminum & Other Non-Ferrous Alloys	TiCN	TiN	50-150	—	Low	800	880	960
					High	4000	4800	5600
High-Silicon Aluminum	TiCN	TiN	—	—	Low	600	660	720
					High	2000	2400	2800

The higher values for surface speed should be used for radial depths of cut less than 25% of the diameter. Lower values for surface speed should be used for radial depths of cut greater than 25% of the diameter. The above recommendations are for axial lengths of cut not to exceed 1 times the cutter diameter for profiling and .5 times the cutter diameter for slotting.

Suggested Feeds for Series CA End Mills *(see page 185 for metric recommendations)*

Chip Load per Tooth for End Mills Series CA-2, CA-2M, CA-2B, CA-3, CA-3M

Chip Load per Tooth

Material	Hardness		Chip Load per Tooth									
	Brinell	HRC	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
Low-Silicon Aluminum & Other Non-Ferrous Alloys	50-150	—	0.0007	0.0011	0.0018	0.0025	0.0034	0.0040	0.0048	0.0060	0.0072	0.0096
High-Silicon Aluminum	—	—	0.0006	0.0010	0.0016	0.0023	0.0031	0.0037	0.0044	0.0056	0.0067	0.0089

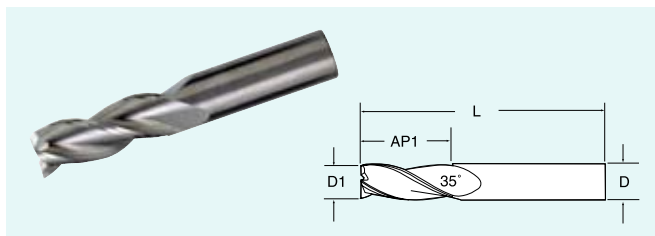
Note: The above speeds and feeds are recommended starting points only and depend upon setup conditions; higher or lower parameters may be required to achieve optimum conditions.

Series CA-3

Features

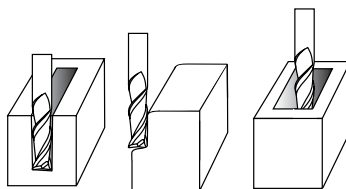
- 3-flute, right-hand helix, right-hand cut
- Center cutting
- Square end
- High rake angle for faster chip flow
- Concentric margins for stability during machining and superior finishes on parts
- Uncoated or TiCN coated standard; other coatings available as a modification

Old Series 500, 545, 550, 555



Applications

- For high-volume metal removal rates and close tolerance slotting.
- Reduces chatter at high spindle speeds.
- Provides excellent surface finishes.
- Feed and speed recommendations are listed on page 68.



Series CA-3 Offering

D1 inch	D inch	AP1 inch	L inch	Uncoated EDP No.	TiCN Coated EDP No.
1/8	1/8	1/4	1-1/2	M32290	M31744
1/8	1/8	3/8	1-1/2	M32291	M31745
3/16	3/16	5/16	2	M32292	M31754
3/16	3/16	9/16	2	M32300	M31755
1/4	1/4	3/8	2	M32301	M31764
1/4	1/4	3/4	2-1/2	M32302	M31765
1/4	1/4	1-1/4	3	M32310	M31774
5/16	5/16	7/16	2	M32311	M31775
5/16	5/16	13/16	2-1/2	M32312	M31784
5/16	5/16	1-1/8	4	M32320	M31785
3/8	3/8	1/2	2	M32321	M31794
3/8	3/8	7/8	2-1/2	M32322	M31795
3/8	3/8	1-1/8	3	M32330	M31804
7/16	7/16	9/16	2-1/2	M32331	M31805
7/16	7/16	7/8	2-1/2	M32332	M31815
7/16	7/16	1	2-1/2	M35971	M35214
7/16	7/16	2	4	M32340	M31824
1/2	1/2	5/8	2-1/2	M32341	M31825
1/2	1/2	1	3	M32342	M31834
1/2	1/2	1-1/4	3	M36340	M35335
1/2	1/2	2	4-1/2	M32350	M31835
1/2	1/2	3-1/8	6	M32351	M31844
5/8	5/8	3/4	3	M32352	M31845
5/8	5/8	1-1/4	3-1/2	M32360	M31854
5/8	5/8	1-5/8	4	M36341	M35344
5/8	5/8	2-1/4	5	M32361	M31855
5/8	5/8	3-3/4	6	M32362	M31864
3/4	3/4	1	3	M32370	M31865
3/4	3/4	1-1/2	4	M32371	M31874
3/4	3/4	2-1/4	5	M32372	M31875
3/4	3/4	4	6-1/2	M32380	M31884
1	1	1-1/4	4	M32381	M31885
1	1	1-1/2	4	M32382	M31894
1	1	2-1/4	5	M32390	M31895
1	1	2-5/8	6	M36342	M35345
1	1	3-1/4	6	M36350	M35354